Critical behavior from geometric confinement in shear thickening suspensions

ERIC BROWN, University of Chicago, HEINRICH JAEGER, University of Chicago — We performed rheometry measurements on shear thickening suspensions. The viscosity is measured as a shear stress over shear rate in the shear thickening region to have divergent scalings of both the magnitude and slope at a critical packing fraction $\phi_c$. The yield stress also has a divergent scaling at $\phi_c$. This is qualitatively different form jamming models in which the yield stress grows gradually from an onset packing fraction. The value of $\phi_c$ depends only on particle shape and equals 0.56 for hard spheres, corresponding to random loose packing and the onset of dilation.